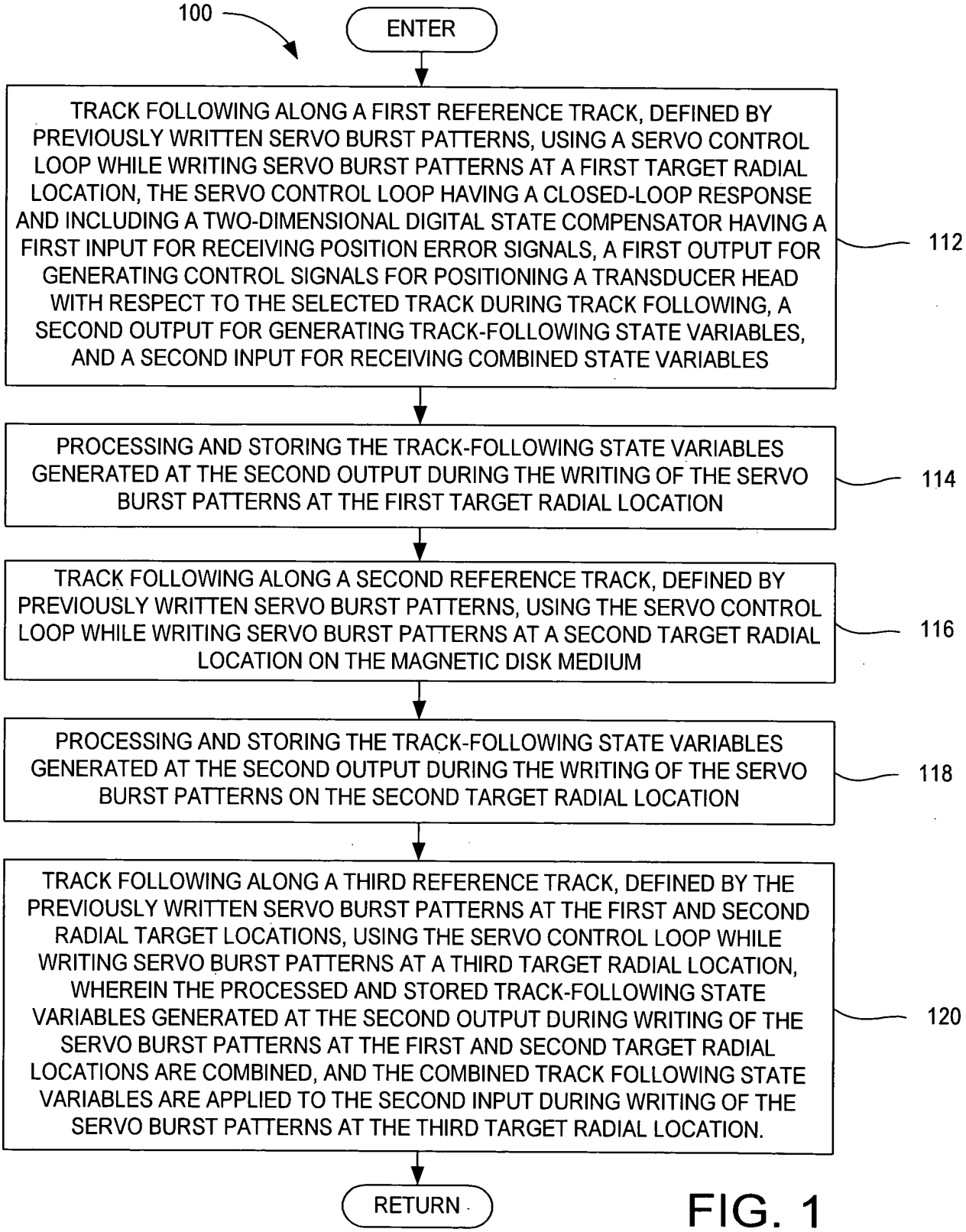
100
ENTER
TRACK FOLLOWING ALONG A FIRST REFERENCE TRACK, DEFINED BY PREVIOUSLY WRITTEN SERVO BURST PATTERNS, USING A SERVO CONTROL LOOP WHILE WRITING SERVO BURST PATTERNS AT A FIRST TARGET RADIAL LOCATION, THE SERVO CONTROL LOOP HAVING A CLOSED-LOOP RESPONSE AND INCLUDING A TWO-DIMENSIONAL DIGITAL STATE COMPENSATOR HAVING A FIRST INPUT FOR RECEIVING POSITION ERROR SIGNALS, A FIRST OUTPUT FOR GENERATING CONTROL SIGNALS FOR POSITIONING A TRANSDUCER HEAD WITH RESPECT TO THE SELECTED TRACK DURING TRACK FOLLOWING, A SECOND OUTPUT FOR GENERATING TRACK-FOLLOWING STATE VARIABLES, AND A SECOND INPUT FOR RECEIVING COMBINED STATE VARIABLES
112
PROCESSING AND STORING THE TRACK-FOLLOWING STATE VARIABLES GENERATED AT THE SECOND OUTPUT DURING THE WRITING OF THE SERVO BURST PATTERNS AT THE FIRST TARGET RADIAL LOCATION
114
TRACK FOLLOWING ALONG A SECOND REFERENCE TRACK, DEFINED BY PREVIOUSLY WRITTEN SERVO BURST PATTERNS, USING THE SERVO CONTROL LOOP WHILE WRITING SERVO BURST PATTERNS AT A SECOND TARGET RADIAL LOCATION ON THE MAGNETIC DISK MEDIUM
116
PROCESSING AND STORING THE TRACK-FOLLOWING STATE VARIABLES GENERATED AT THE SECOND OUTPUT DURING THE WRITING OF THE SERVO BURST PATTERNS ON THE SECOND TARGET RADIAL LOCATION
118
TRACK FOLLOWING ALONG A THIRD REFERENCE TRACK, DEFINED BY THE PREVIOUSLY WRITTEN SERVO BURST PATTERNS AT THE FIRST AND SECOND RADIAL TARGET LOCATIONS, USING THE SERVO CONTROL LOOP WHILE WRITING SERVO BURST PATTERNS AT A THIRD TARGET RADIAL LOCATION, WHEREIN THE PROCESSED AND STORED TRACK-FOLLOWING STATE VARIABLES GENERATED AT THE SECOND OUTPUT DURING WRITING OF THE SERVO BURST PATTERNS AT THE FIRST AND SECOND TARGET RADIAL LOCATIONS ARE COMBINED, AND THE COMBINED TRACK FOLLOWING STATE VARIABLES ARE APPLIED TO THE SECOND INPUT DURING WRITING OF THE SERVO BURST PATTERNS AT THE THIRD TARGET RADIAL LOCATION.
120
RETURN

FIG. 1

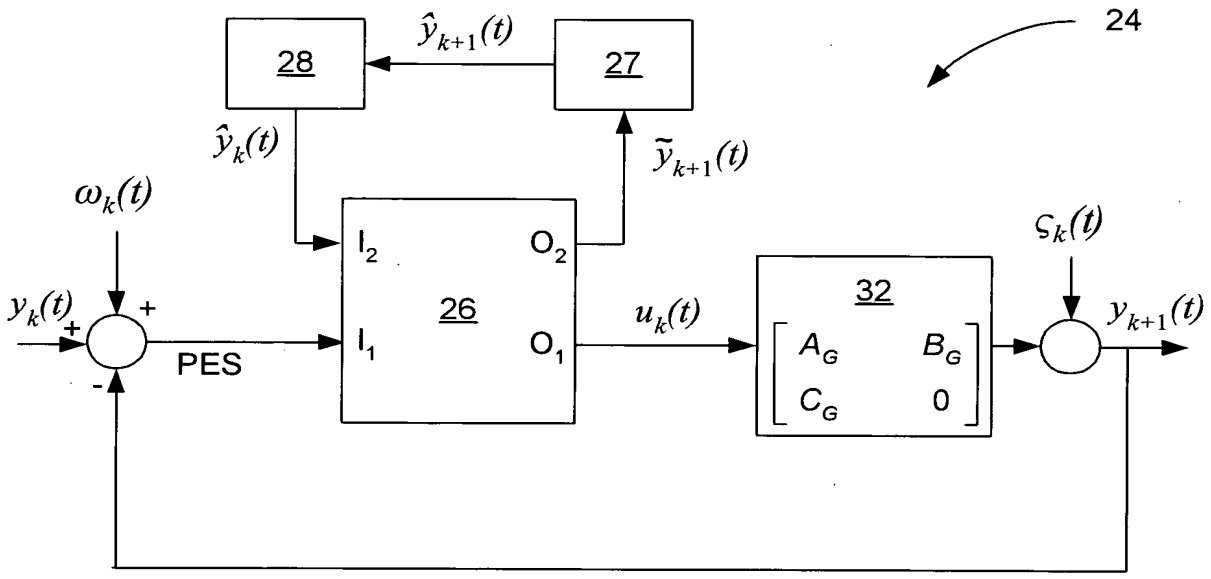
28
27
24
$\hat{y}_{k+1}(t)$
$\hat{y}_k(t)$
$\tilde{y}_{k+1}(t)$
$\omega_k(t)$
$\varsigma_k(t)$
$y_k(t)$
$y_{k+1}(t)$
$u_k(t)$
I_2
O_2
26
I_1
O_1
32
A_G
B_G
C_G
0
PES
+
+
-

FIG. 2

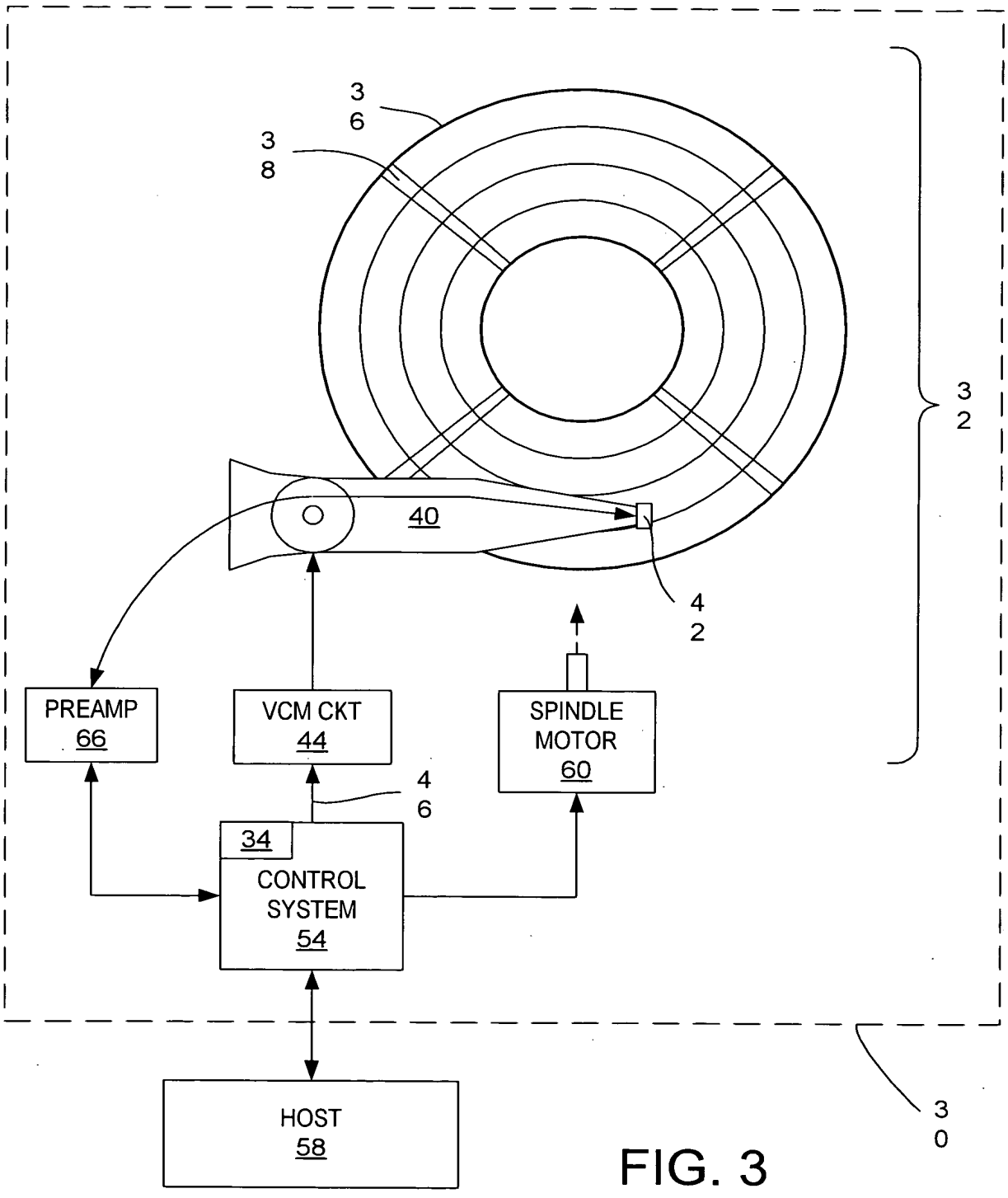
36
38
32
40
42
PREAMP
66
VCM CKT
44
SPINDLE
MOTOR
60
46
34
CONTROL
SYSTEM
54
HOST
58
30

FIG. 3

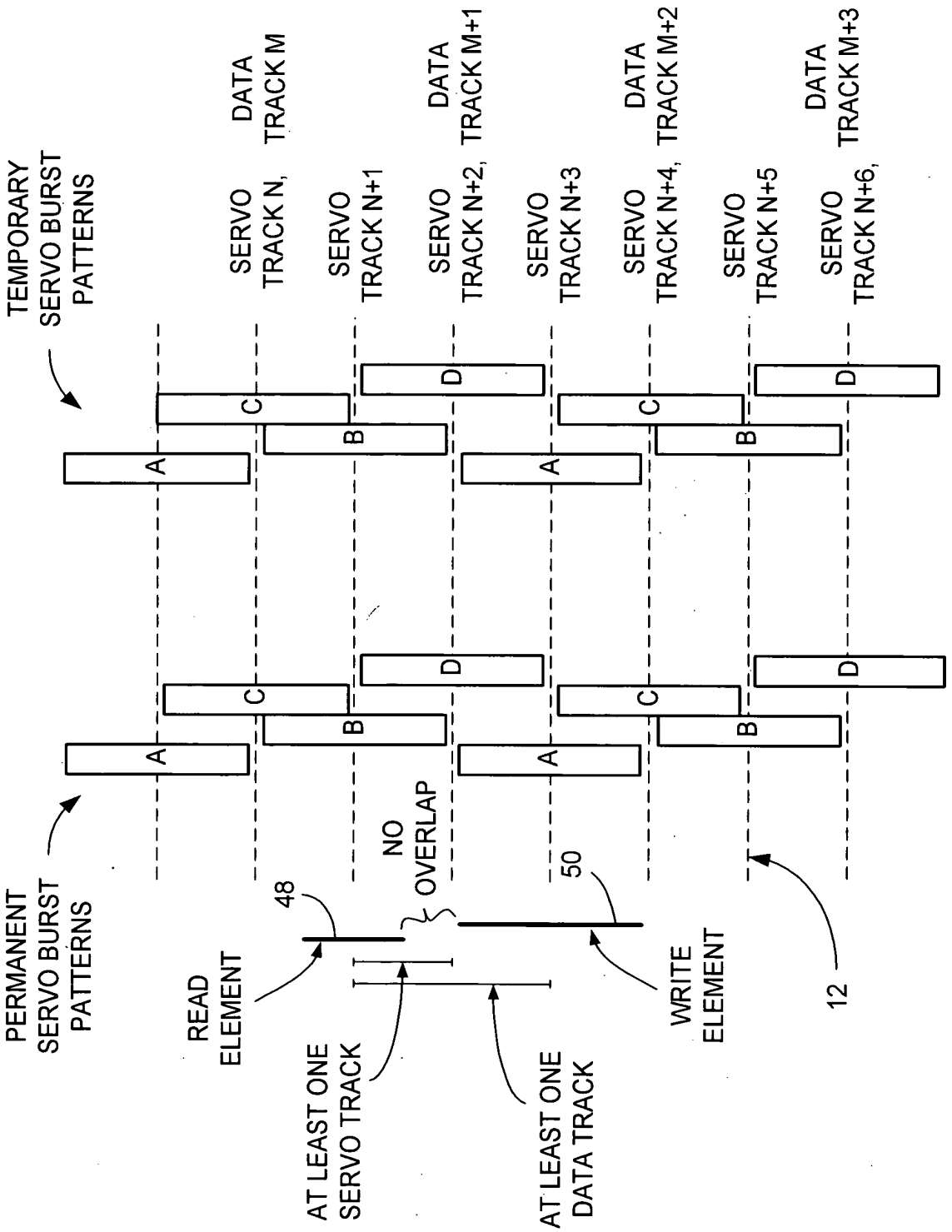
TEMPORARY SERVO BURST PATTERNS
SERVO TRACK N,
SERVO TRACK N+1
SERVO TRACK N+2,
SERVO TRACK N+3
SERVO TRACK N+4,
SERVO TRACK N+5
SERVO TRACK N+6,
DATA TRACK M
DATA TRACK M+1
DATA TRACK M+2
DATA TRACK M+3
A
B
C
D
PERMANENT SERVO BURST PATTERNS
NO OVERLAP
48
50
READ ELEMENT
WRITE ELEMENT
12
AT LEAST ONE SERVO TRACK
AT LEAST ONE DATA TRACK

FIG. 4

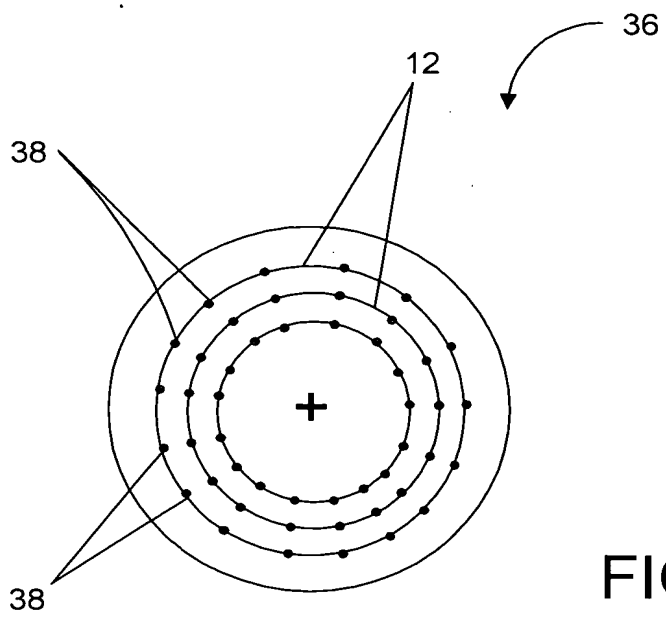

FIG. 5A

IDEAL SERVO TRACKS

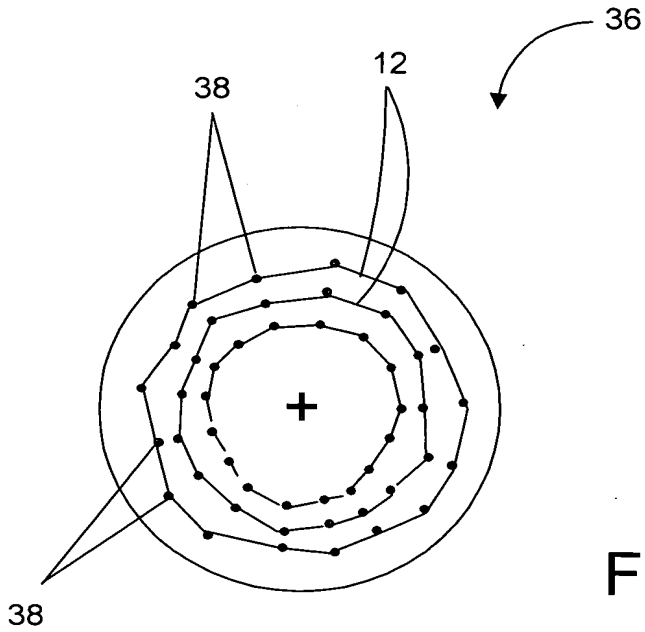

FIG. 5B

WRITTEN SERVO TRACKS

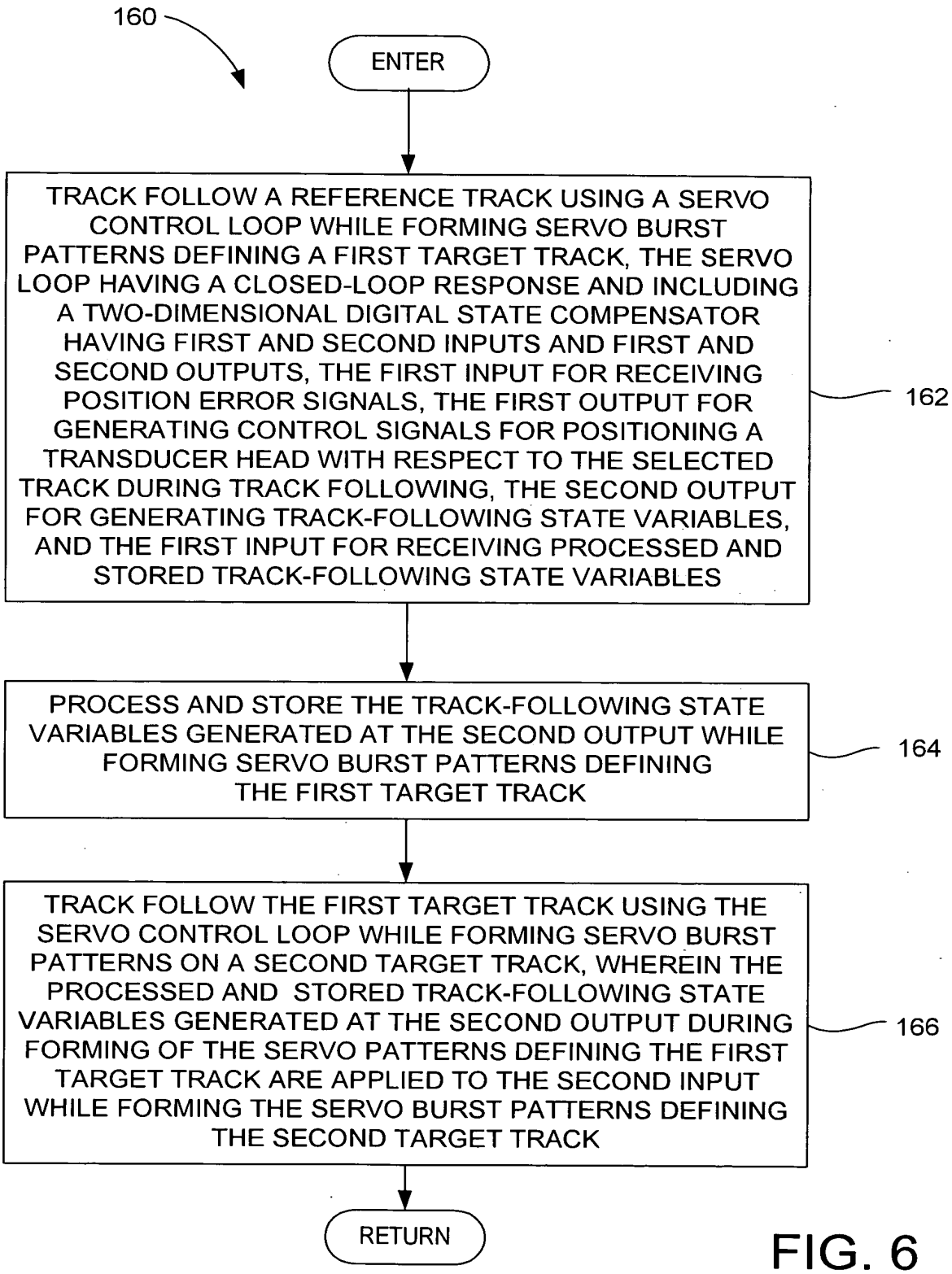
160
ENTER
TRACK FOLLOW A REFERENCE TRACK USING A SERVO CONTROL LOOP WHILE FORMING SERVO BURST PATTERNS DEFINING A FIRST TARGET TRACK, THE SERVO LOOP HAVING A CLOSED-LOOP RESPONSE AND INCLUDING A TWO-DIMENSIONAL DIGITAL STATE COMPENSATOR HAVING FIRST AND SECOND INPUTS AND FIRST AND SECOND OUTPUTS, THE FIRST INPUT FOR RECEIVING POSITION ERROR SIGNALS, THE FIRST OUTPUT FOR GENERATING CONTROL SIGNALS FOR POSITIONING A TRANSDUCER HEAD WITH RESPECT TO THE SELECTED TRACK DURING TRACK FOLLOWING, THE SECOND OUTPUT FOR GENERATING TRACK-FOLLOWING STATE VARIABLES, AND THE FIRST INPUT FOR RECEIVING PROCESSED AND STORED TRACK-FOLLOWING STATE VARIABLES
162
PROCESS AND STORE THE TRACK-FOLLOWING STATE VARIABLES GENERATED AT THE SECOND OUTPUT WHILE FORMING SERVO BURST PATTERNS DEFINING THE FIRST TARGET TRACK
164
TRACK FOLLOW THE FIRST TARGET TRACK USING THE SERVO CONTROL LOOP WHILE FORMING SERVO BURST PATTERNS ON A SECOND TARGET TRACK, WHEREIN THE PROCESSED AND STORED TRACK-FOLLOWING STATE VARIABLES GENERATED AT THE SECOND OUTPUT DURING FORMING OF THE SERVO PATTERNS DEFINING THE FIRST TARGET TRACK ARE APPLIED TO THE SECOND INPUT WHILE FORMING THE SERVO BURST PATTERNS DEFINING THE SECOND TARGET TRACK
166
RETURN

FIG. 6

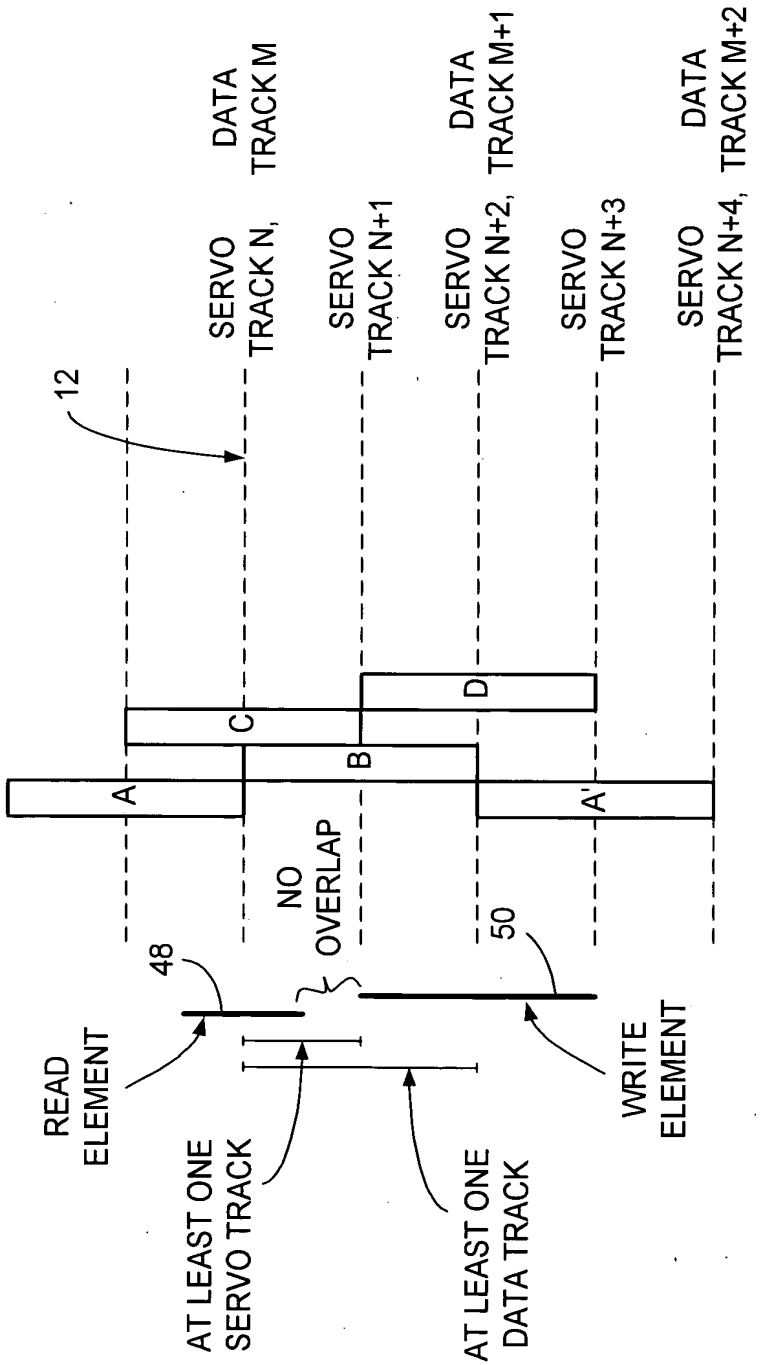
12
SERVO TRACK N,
DATA TRACK M
SERVO TRACK N+1
DATA TRACK M+1
SERVO TRACK N+2,
SERVO TRACK N+3
SERVO TRACK N+4,
DATA TRACK M+2
A
B
C
D
A'
NO OVERLAP
48
50
READ ELEMENT
WRITE ELEMENT
AT LEAST ONE SERVO TRACK
AT LEAST ONE DATA TRACK

FIG. 7